==========

Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Anne Corrigan

Timestamp: [year=2009; month=6; day=12; hr=7; min=19; sec=29; ms=256;]

==========

Validated By CRFValidator v 1.0.3

Application No: 10082973 Version No: 4.0

Input Set:

Output Set:

Started: 2009-06-04 17:28:19.196
Finished: 2009-06-04 17:28:21.284
Elapsed: 0 hr(s) 0 min(s) 2 sec(s) 88 ms
Total Warnings: 27
Total Errors: 0
No. of SeqIDs Defined: 73
Actual SeqID Count: 73

Error code	Error Description
W 213	Artificial or Unknown found in <213> in SEQ ID (1)
W 213	Artificial or Unknown found in <213> in SEQ ID (2)
W 213	Artificial or Unknown found in <213> in SEQ ID (3)
W 213	Artificial or Unknown found in <213> in SEQ ID (4)
W 213	Artificial or Unknown found in <213> in SEQ ID (5)
W 213	Artificial or Unknown found in <213> in SEQ ID (6)
W 213	Artificial or Unknown found in <213> in SEQ ID (7)
W 402	Undefined organism found in <213> in SEQ ID (15)
W 213	Artificial or Unknown found in <213> in SEQ ID (18)
W 402	Undefined organism found in <213> in SEQ ID (22)
W 213	Artificial or Unknown found in <213> in SEQ ID (37)
W 213	Artificial or Unknown found in <213> in SEQ ID (38)
W 213	Artificial or Unknown found in <213> in SEQ ID (39)
W 213	Artificial or Unknown found in <213> in SEQ ID (40)
W 213	Artificial or Unknown found in <213> in SEQ ID (41)
W 213	Artificial or Unknown found in <213> in SEQ ID (42)
W 213	Artificial or Unknown found in <213> in SEQ ID (43)
W 213	Artificial or Unknown found in <213> in SEQ ID (44)
W 213	Artificial or Unknown found in <213> in SEQ ID (45)
W 213	Artificial or Unknown found in <213> in SEQ ID (46)

Input Set:

Output Set:

Started: 2009-06-04 17:28:19.196
Finished: 2009-06-04 17:28:21.284
Elapsed: 0 hr(s) 0 min(s) 2 sec(s) 88 ms
Total Warnings: 27
Total Errors: 0
No. of SeqIDs Defined: 73
Actual SeqID Count: 73

Error code	Error Description
W 213	Artificial or Unknown found in <213> in SEQ ID (47)
W 213	Artificial or Unknown found in <213> in SEQ ID (48) This error has occured more than 20 times, will not be displayed

SEQUENCE LISTING

<110> Norris, James S.
Clawson, Gary A.
Schmidt, Michael G.
Hoel, Brian D.
Pan, Wei-Hua
Dolan, Joseph W.

<120> TISSUE-SPECIFIC AND TARGET RNA-SPECIFIC RIBOZYMES

<130> 14017-0004002

<140> 10082973
<141> 2009-06-04

<150> 09/338,942
<151> 1999-06-24

<150> 60/090,560
<151> 1998-06-24

<150> 60/096,502
<151> 1998-08-14

<160> 73

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 492
<212> DNA
<213> Artificial Sequence

<220>
<223> ARN promoter

<400> 1
actcgcggat catcttcacc atcggccgca actcctgcgg gatatcctcg tcctcctcct 60
ccaccggcac ccccatggta gcggccagct cgcgccctgc ctgggaaagc tgtacatgct 120
gatcggcggc gtcggtgccg gcggccgggt cttccgcctg ctcggcggtg ccggtccgtg 180
cggccttggc gtccgcggcg gcgcgcgatg agggcggcac ctgggtggtg atccagccac 240
tgagggtcaa cattccagtc actccgggaa aaatggaatt cttccattgg atcggcccac 300
gcgtcgcgaa cttgagcccc cttttcgtcg ccccttgaca gggtgcgaca ggtagtcgca 360
gttgtttgac gcaagtcact gattggaaac gccatcggcc tgtcagaaat ggtcgttgcc 420
agacctatgg ctggcacccg catcgcggct gcgttaccct tactcctgtt gtgcctttaa 480
cctagcaagg ac 492

<210> 2
<211> 1113
<212> DNA
<213> Artificial Sequence

<220>
<223> PROC promoter

<400> 2
aattcctcga agtccttgcg ctgcttgtcg ttcatgatgt cgtagatcag cgcatgcacc 60
tgcttgtgtt ccagcggtgg caggttgatc cggcgtacat cgccatccac ccggatcatg 120
ggtggcaggc cggcggagag gtgcaggtcc gaagcgccct gtttggcact gaaggcgagc 180
agctcggtaa tatccatggg actccccaat tacaagcaag caggtagaat gccgccaaag 240
ccgccgtctc ggacaaggaa aacaccggat gagccagggt gcttccagga cacgcgtggt 300
gtcctgcgcc agacgcggaa cctcgacact ggaacaggaa gatggccatc gaggccggcg 360
gtttcgaggg cgtcgagccg acgccgaccg cacttccata gggcgcaggt aatgtccacg 420
atagcagaga atattgcaaa ggttgccgcg cgcatccgtg aggcagcgca agctgcgggg 480
cgcgatccgg ccacggtcgg cctgctcgcc gtgagcaaga ccaagcccgc cgccgcggtg 540
cgcgaggcgc acgccgccgg ccttcgcgac ttcggcgaaa actacctgca ggaggccctc 600
ggcaagcagg ccgaactggc cgacctgccc ttgaactggc acttcatcgg ccccatccag 660
tcgaacaaga cgcggcccat cgccgagcat ttccagtggg tgcactcggt ggaccggttg 720
aagatcgcgc agcgcctgtc ggagcaacgc ccggccgggc tgccgcccct gaatgtctgc 780
ctgcaggtca acgtcagcgg cgaagccagc aagtccggct gcgcccccga ggacctgccg 840
gccctggccg aggccgtgaa gcaactgccc aacctccgat tgcgtggcct gatggccatc 900
cccgaaccca ccgccgaacg cgccgcgcaa cacgccgcgt tcgcccgcct gcgcgaactg 960
ctgctggacc tgaaccttgg cctggacacc ctgtccatgg gcatgagcga cgacctcgag 1020
gcagccatcg gcgaaggtgc gacctgggtc cgcatcggta ccgccctgtt cggcgcccgc 1080
gactacggcg cgccggcttc ttgaatgaat ccc 1113

<210> 3
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> ARC promoter

<400> 3
ctagagctat tgatgtggat caacattgtc cactagccgc tgccgcctaa tctccagaat 60
tgtgag 66

<210> 4
<211> 685
<212> DNA
<213> Artificial Sequence

<220>
<223> UPCM2 cassette sequence

<400> 4
tcagaaaatt attttaaatt tccaattgac attgtgagcg gataacaata taatgtgtgg 60
aagcttatcg ataccgtcga cctcgaagct ttggaaccct gatgagtccg tgaggacgaa 120
acgatgacat tctgctgacc agattcacgg tcagcagaat gtcatcgtcg gttccaggat 180
ccggctgcta acaaagcccg aaaggaagct gagttggctg ctgccaccgc tgagcaataa 240
ctagcataac cccttggggc ctctaaacgg gtcttgaggg gttttttgct gaaaggagga 300
actatatccg gatatcccgc aagaggcccg gcagtaccgg cataaccaag cctatgccta 360
cagcatccag ggtgacggtg ccgaggatga cgatgagcgc attgttagat ttcatacacg 420
gtgcctgact gcgttagcaa tttaactgtg ataaactacc gcattaaagc ttatcgatga 480
taagctgtca aacatgagaa ttcggcgtat acgccgaatt tcaagggtct gcgcaacgac 540
gacgatgagg taccacatcg tcgtcgttgc gcactgatga ggccgtgagg ccgaaaccct 600
tgacgcgtaa aaaaaacccg ccccggcggg ttttttaccc ttcctatgcg gccgctctag 660
tcgaggggggg gcccgctaga actag 685

<210> 5

<211> 673
<212> DNA
<213> Artificial Sequence

<220>
<223> P2CM2 cassette sequence

<400> 5
agaaagcaaa aataaatgct tgacactgta gcgggaaggc gtataatgga attgtgagcg 60
gataacaatt cacaagctta tcgataccgt cgacctcgag ctttggaacc ctgatgagtc 120
cgtgaggacg aaacgatgac attctgctga ccagattcac ggtcagcaga atgtcatcgt 180
cggttccagg atccggctgc taacaaagcc cgaaaggaag ctgagttggc tgctgccacc 240
gctgagcaat aactagcata acccccttggg gcctctaaac gggtcttgag gggttttttg 300
ctgaaaggag gaactatatc cggatatccc gcaagaggcc cggcagtacc ggcataacca 360
agcctatgcc tacagcatcc agggtgacgg tgccgaggat gacgatgagc gcattgttag 420
atttcataca cggtgcctga ctgcgttagc aatttaactg tgataaacta ccgcattaaa 480
gcttatcgat gataagctgt caaacatgag aattcggcgt atacgccgaa tttcaagggt 540
ctgcgcaacg acgacgatga ggtaccacat cgtcgtcgtt gcgcactgat gaggccgtga 600
ggccgaaacc cttgacgcgt aaaaaaaacc cgccccggcg ggtttttttac gcgttcctat 660
gcggccgctc tag 673

<210> 6
<211> 14
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 6
agctcgagct caga 14

<210> 7
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 7
tcgacggatc tagatcc 17

<210> 8
<211> 56
<212> DNA
<213> Escherichia coli

<400> 8
agatctaaat cattcacctg atgagtccgt gaggacgaaa ctttagcaaa ccaagg 56

<210> 9
<211> 54
<212> DNA
<213> Escherichia coli

<400> 9
agatctaaat tcgtttctga tgagtccgtg aggacgaaac accacaaaag atct 54

<210> 10
<211> 54
<212> DNA
<213> Escherichia coli

<400> 10
agatctaaac cacatcctga tgagtccgtg aggacgaaac agtttaaacc aagg 54

<210> 11
<211> 55
<212> DNA
<213> Escherichia coli

<400> 11
agatctaaac gatttcctga tgagtccgtg aggacgaaac atcaccaaac caagg 55

<210> 12
<211> 56
<212> DNA
<213> Escherichia coli

<400> 12
agatctaaat gcgtctgatg agtccgtgag gacgaaacag gcaggtaaaa ccaagg 56

<210> 13
<211> 53
<212> DNA
<213> Streptomyces lividans

<400> 13
agatctaaag tactcctgat gagtccgtga ggacgaaacc agcgaaacca agg 53

<210> 14
<211> 55
<212> DNA
<213> Enterococcus faecalis

<400> 14
agatctaaaa cttttgctga tgagtccgtg aggacgaaac gtgtataaac caagg 55

<210> 15
<211> 54
<212> DNA
<213> Psudeomonas putida

<400> 15
agatctaaat cgctttctga tgagtccgtg aggacgaaac gtgataaacc aagg 54

<210> 16
<211> 54
<212> DNA
<213> Streptomyces coelicolor

<400> 16

agatctaaag tcgatgctga tgagtccgtg aggacgaaac ttcgcaaacc aagg 54

<210> 17
<211> 56
<212> DNA
<213> Staphylococcus warneri

<400> 17
agatctaaat gcgtctgatg agtccgtgag gacgaaacag gcaggcgaaa ccaagg 56

<210> 18
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> B2 consensus

<400> 18
tgctcttctg atgagtccgt gaggacgaaa ccgcctga 38

<210> 19
<211> 39
<212> DNA
<213> Mus musculus

<400> 19
ttcaaagact gatgagtccg tgaggacgaa acgaggatc 39

<210> 20
<211> 34
<212> DNA
<213> Mus musculus

<400> 20
gtccatctga tgagtccgtg aggacgaaac cggc 34

<210> 21
<211> 36
<212> DNA
<213> Hepatitis B virus

<400> 21
attagagctg atgagtccgt gaggacgaaa caaacg 36

<210> 22
<211> 37
<212> DNA
<213> Human papillomavirus

<400> 22
gtcctgactg atgagtccgt gaggacgaaa cattgca 37

<210> 23
<211> 44
<212> DNA
<213> Homo sapiens

<400> 23
tccgttgtct ctgatgagtc cgtgaggacg aaacatgaca ccga 44

<210> 24
<211> 39
<212> DNA
<213> Homo sapiens

<400> 24
gcgaggagct gatgagtccg tgaggacgaa acatggtgt 39

<210> 25
<211> 37
<212> DNA
<213> Mus musculus

<400> 25
aacttttctg atgagtccgt gaggacgaaa cataatg 37

<210> 26
<211> 42
<212> DNA
<213> Rattus norvegicus

<400> 26
tcgaagctgt ctgatgagtc cgtgaggacg aaaccgcgtt ga 42

<210> 27
<211> 37
<212> DNA
<213> Mus musculus

<400> 27
atcagggtct gatgagtccg tgaggacgaa aggtgcc 37

<210> 28
<211> 37
<212> DNA
<213> Rattus norvegicus

<400> 28
tcttcgactg atgagtccgt gaggacgaaa catggct 37

<210> 29
<211> 37
<212> DNA
<213> Homo sapiens

<400> 29
tagcacactg atgagtccgt gaggacgaaa cgtttga 37

<210> 30
<211> 36
<212> DNA
<213> Homo sapiens

<400> 30

tgcaatactg atgagtccgt gaggacgaaa ctgcct 36

<210> 31
<211> 36
<212> DNA
<213> Homo sapiens

<400> 31
aagtcatctg atgagtccgt gaggacgaaa cctgga 36

<210> 32
<211> 36
<212> DNA
<213> Homo sapiens

<400> 32
gataaggctg atgagtccgt gaggacgaaa ctttcc 36

<210> 33
<211> 36
<212> DNA
<213> Homo sapiens

<400> 33
catattcctg atgagtccgt gaggacgaaa cactcg 36

<210> 34
<211> 38
<212> DNA
<213> Homo sapiens

<400> 34
tcatgtatct gatgagtccg tgaggacgaa acaaaagg 38

<210> 35
<211> 36
<212> DNA
<213> Homo sapiens

<400> 35
ggttaaactg atgagtccgt gaggacgaaa cttggg 36

<210> 36
<211> 36
<212> DNA
<213> Homo sapiens

<400> 36
gtccagtctg atgagtccgt gaggacgaaa cttaag 36

<210> 37
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 37
cccgggaatt cgtgatggcc acgcggccgc tcgagctctg atgagtccgt gagga 55

<210> 38
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 38
gacgggatcc agatctgagc tcgagctgac ggtaccgggt accgtttcgt cctcacgga 59

<210> 39
<211> 55
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 39
gagctcagat ctggatccgt cgacggatct agatccgtcc tgatgagtcc gtgag 55

<210> 40
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 40
ttgcttggcc agcggccgct gcagatccgt ttcgtcctca cggact 46

<210> 41
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 41
gatctgctct tctgatgagt ccgtgaggac gaaaccgctg a 41

<210> 42
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 42

gatctcagcg gtttcgtcct cacggactca tcagaagagc a 41

<210> 43
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> ribozyme construct

<400> 43
cttggaaccg gatgccaggc atccggttgg tgcctttcgt cctcacggac tcatcagtag 60
tgaa 64

<210> 44
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> ribozyme construct

<400> 44
cttggaaccg gatgccaggc atccggttaa gaagtttcgt cctcacggac tcatcagtta 60
cccta 65

<210> 45
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> ribozyme construct

<400> 45
aattcaaccg gatgccaggc atccggttct caggtttcgt cctcacggac tcatcagaaa 60
atctg 65

<210> 46
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> ribozyme construct

<400> 46
aattcaaccg gatgccaggc atccggtttg gacctttcgt cctcacggac tcatcagagc 60
gtgg 64

<210> 47
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> ribozyme construct

<400> 47
aattcaaccg gatgccaggc atccggttca gcctttcgtc ctcacggact catcagtgtg 60
ttg 63

<210> 48
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> ribozyme construct

<400> 48
aattcaaccg gatgccaggc atccggttaa ccttttttcgt cctcacggac tcatcagctc 60
tacg 64

<210> 49
<211> 170
<212> RNA
<213> Artificial Sequence

<220>
<223> pClip triple ribozyme

<221> modified_base
<222> (1)...(170)
<223> n=a, c, g, or u

<400> 49
gcggccgcuc gagcucugau gaguccguga ggacgaaacg guacccggua ccgucagcuc 60
gagaucunnn nnnncugaug aguccgugag gacgaaannn nnagauccgu cgacggaucu 120
agauccgucc ugaugagucc gugaggacga aacggaucug cagcggccgc 170

<210> 50
<211> 249
<212> RNA
<213> Artificial Sequence

<220>
<223> pChop triple ribozyme

<220>
<221> modified_base
<222> (1)...(249)
<223> n=a, c, g, or u

<400> 50
aagcuuugga acccugauga guccgugagg acgaaacgau gacauucugc ugaccagauu 60
cacggucagc agaaugucau cgucgguucc aggauccnnn nnncugauga guccgugagg 120
acgaaannnn nnnnnggaau uccaaggguc ugcgcaacga cgacgaugag guaccacauc 180
gucgucguug cgcacugaug aggccgugag gccgaaaccc uugacgcguu ccuaugcggc 240
cgcucuaga 249

<210> 51
<211> 364

<212> DNA
<213> Artificial Sequence

<220>
<223> pSnip ribozyme cassette

<400> 51
aagcttcgag ctctgatgag tccgtgagga cgaaacggta cccggtaccg tcagctcgac 60
ctcagatctc tcgagcaatt gatccgtcga cggatgtaga tccgtcctga tgagtccgtg 120
aggacgaaac ggatctgcag cggatatcca gctttggaac cctgatgagt ccgtgaggac 180
gaaacgatga cattctgctg accagattca cggtcagcag aatgtcatcg tcggttccag 240
gatccttgcc tgaattccaa gggtctgcgc aacgacgacg atgaggtacc acatcgtcgt 300
cgttgcgcac tgatgaggcc gtgaggccga aacccttgac gcgttcctat gcggccgctc 360
taga 364

<210> 52
<211> 685
<212> DNA
<213> Artificial Sequence

<220>
<223> modified pChop cassette

<400> 52
tcagaaaatt attttaaatt tccaattgac attgtgagcg gataacaata taatgtgtgg 60
aagcttatcg ataccgtcga cctcgaagct ttggaaccct gatgagtccg tgaggacgaa 120
acgatgacat tctgctgacc agattcacgg tcagcagaat gtcatcgtcg gttccaggat 180
ccggctgcta acaaagcccg aaaggaagct gagttggctg ctgccaccgc tgagcaataa 240
ctagcataac cccttggggc ctctaaacgg gtcttgaggg gttttttgct gaaaggagga 300
actatatccg gatatcccgc aagaggcccg gcagtaccgg cataaccaag cctatgccta 360
cagcatccag ggtgacggtg ccgaggatga cgatgagcgc attgttagat ttcatacacg 420
gtgcctgact gcgttagcaa tttaactgtg ataaactacc gcattaaagc ttatcgatga 480
taagctgtca aacatgagaa ttcggcgtat acgccgaatt tcaagggtct gcgcaacgac 540
gacgatgagg taccacatcg tcgtcgttgc gcactgatga ggccgtgagg ccgaaaccct 600
tgacgcgtaa aaaaaacccg ccccggcggg ttttttaccc ttcctatgcg gccgctctag 660
tcgaggggggg gcccgctaga actag 685

<210> 53
<211> 216
<212> DNA
<213> Artificial Sequence

<220>
<223> pChop ribozyme cassette

<400> 53
aagcuuugga acccugauga guccgugagg acgaaacgau gacauucugc ugaccagauu 60
cacggucagc agaaugucau cgucgguucc aggauccuug ccugaauucc aagggucugc 120
gcaacgacga cgaugaggua ccacaucguc gucguugcgc acugaugagg ccgugaggcc 180
gaaacccuug acgcguuccu augcggccgc ucuaga 216

<210> 54
<211> 54
<212> DNA
<213> Escherichia coli

<400> 54
agatctaaac gccgatctga tgagtccgtg aggacgaaac tttaaaaacc aagg 54

<210> 55
<211> 56
<212> DNA
<213> Escherichia coli

<400> 55
agatctaaac atctcactga tgagtccgtg aggacgaaac attacgaaac caaagg 56

<210> 56
<211> 54
<212> DNA
<213> Escherichia coli

<400> 56
agatctaaaa aaaaacctga tgagtccgtg aggacgaaac tggttaaaag atct 54

<210> 57
<211> 54
<212> DNA
<213> Escherichia coli

<400> 57
agatctaaat tatccactga tgagtccgtg aggacgaaac gggcgaaaag atct 54

<210> 58
<211> 54
<212> DNA
<213> Escherichia coli

<400> 58
agatctaaat cgttacctga tgagtccgtg aggacgaaac taccgaaaag atct 54

<210> 59
<211> 54
<212> DNA
<213> Escherichia coli

<400> 59
agatctaaat gatgttctga tgagtccgtg aggacgaaac cacttaaaag atct 54

<210> 60
<211> 54
<212> DNA
<213> Escherichia coli

<400> 60
agatctaaat tttccactga tgagtccgtg aggacgaaac gtgcaaaaag atct 54

<210> 61
<211> 55
<212> DNA
<213> Escherichia coli

<400> 61
agatctaatt gataccctga tgagtccgtg aggacgaaac agtcagaaaa gatct 55

<210> 62
<211> 54
<212> DNA
<213> Escherichia coli

<400> 62
agatctaaac gttagtctga tgagtccgtg aggacgaaac caacaaaacc aagg 54

<210> 63
<211> 54
<212> DNA
<213> Escherichia coli

<400> 63
agatctaaag gcatcactga tgagtccgtg aggacgaaac tgttaaaacc aagg 54

<210> 64
<211> 53
<212> DNA
<213> Escherichia coli

<400> 64
agatctaaaa gagcgctgat gagtccgtga ggacgaaaca gtcaaaacca agg 53

<210> 65
<211> 54
<212> DNA
<213> Escherichia coli

<400> 65
agatctaaat ttcgatctga tgagtccgtg aggacgaaac cagctaaacc aagg 54

<210> 66
<211> 53
<212> DNA
<213> Streptomyces lividans

<400> 66
agatctaaac tcgtcctgat gagtccgtga ggacgaaacg atcaaaacca agg 53

<210> 67
<211> 51
<212> DNA
<213> Streptomyces lividans

<400> 67
agatctaaag ggcgctgatg agtccgtgag gacgaaacgc gaaaaccaag g 51

<210> 68
<211> 56
<212> DNA
<213> Enterococcus faecalis

<400> 68
agatctaaaa ctaaatgctg atgagtccgt gaggacgaaa cgagttaaaa ccaagg 56

<210> 69
<211> 57
<212> DNA
<213> Enterococcus faecalis

<400> 69
agatctaaag tttaataact gatgagtccg tgaggacgaa acttgttcaa accaagg 57

<210> 70
<211> 54
<212> DNA
<213> Pseudomonas putida

<400> 70
agatctaaag gtccatctga tgagtccgtg aggacgaaac aaagcaaacc aagg 54

<210> 71
<211> 54
<212> DNA
<213> Pseudomonas putida

<400> 71
agatctaaac aggttcctga tgagtccgtg aggacgaaac aatgtaaacc aagg 54

<210> 72
<211> 54
<212>